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**west virginia** department of environmental protection

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Earl Ray Tomblin, Governor  
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## **ENGINEERING EVALUATION / FACT SHEET**

### **BACKGROUND INFORMATION**

Application No.:	R13-2912
Plant ID No.:	011-00205
Applicant:	U.S. Equipment Distributors, Inc.
Facility Name:	Huntington Facility
Location:	Cabell County
NAICS Code:	333131
Application Type:	Construction
Received Date:	January 17, 2012
Engineer Assigned:	Steven R. Pursley, PE
Fee Amount:	\$1,000.00
Date Received:	January 20, 2012
Complete Date:	February 16, 2012
Due Date:	May 16, 2012
Applicant Ad Date:	January 21, 2012
Newspaper:	<i>The Herald-Dispatch</i>
UTM's:	Easting: 371.85 km      Northing: 4,251.97 km      Zone: 17
Description:	Construction of a coatings operation.

### **DESCRIPTION OF PROCESS**

U.S. Equipment Distributors, Inc. Bought the Eagle Coatings facility in 2007. In 2009, they moved the equipment to this new facility.

Raw materials or completed parts are placed in the storage area. Next the materials or parts are cleaned in either the wheelabrator (abrasive blast machine) or abrasive blast room. The cleaned parts are then transported to the coatings area. There, the parts or material receive their specified coatings and after drying are transported to the completed products area or loaded directly onto trucks.

## SITE INSPECTION

The facility has been visited by Gene Coccari of DAQs small business assistance program. Mr. Coccari stated that the facility is in a heavily industrialized area similar to an industrial park. To get to the facility take Interstate 64 west to the 5<sup>th</sup> st. exit (exit 8). Veer right and go approximately 1.1 miles to 10<sup>th</sup> Ave. Turn left and go approximately 1 mile to the industrial park. At the end of the road veer right and see the U.S. Equipment sign.

## ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

Emissions calculations were performed by Gene Coccari of DAQs small business assistance program.

### PM METHODOLOGY

PM emissions from the Abrasive Blasting room used AP-42 controlled emission factors from Chapter 13.2.6. PM emissions from the Wheelabrator Shot Blaster were based on actual measurements of particulate collected from the baghouse and an assumption that the baghouse was 99% efficient. PM emissions from the coating operations were based upon a mass balance approach. For each given coating the solids content was obtained and then a transfer efficiency of 45% and a settling chamber efficiency of 80% was assumed. Then a 90% control efficiency was assumed for the paint booth filter.

### VOC/HAP METHODOLOGY

VOCs and HAPs were calculated with a simple mass balance assuming all VOCs and HAPs are released into the atmosphere. This methodology utilized specific usages of each particular coating/stain/solvent. However, in order to give maximum flexibility while ensuring compliance with the emission limits, the permit will simply limit the amount of each HAP used along with total VOCs used.

Emissions of criteria pollutants from the facility will be limited to the following:

	PM		PM <sub>10</sub> /PM <sub>2.5</sub>		VOCs	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
Coating Booth	12.03	0.91	5.73	0.43	58.8	41.20
Abrasive Blast Room	0.01	0.01	0.01	0.01	--	--
Wheelabrator	0.36	0.50	0.17	0.24	--	--
<b>Total</b>	<b>12.4</b>	<b>1.42</b>	<b>5.91</b>	<b>0.68</b>	<b>58.8</b>	<b>41.2</b>

HAP emissions from the facility (coating area) will be limited to the following (no controls):

HAP	lb/hr*	tpy
Xylene	61.0	9.76
Toluene	56.8	2.28
Naphthalene	1.12	0.07
Ethylene Glycol	4.93	0.58
Ethylbenzene	10.8	1.75
Cobalt Compounds	0.9	0.02
Benzene	1.07	0.02
MIBK	58.81	2.15
Hexamethylene Diisocyanate	68.80	1.18
Formaldehyde	1.15	0.02
Cumene	14.5	0.29
Methanol	2.64	0.05
<b>Total HAPs*</b>	<b>68.80</b>	<b>18.17</b>

\*Hourly rates based on using 10 gallons per hour (which is the maximum physically possible at the facility) of the substance with the highest content of the particular HAP. Total hourly emissions is not the sum of the individual emissions because all of the different coatings/stains/solvents cannot be used at the same time.

#### REGULATORY APPLICABILITY

The following state and federal regulations apply to the facility:

##### STATE RULES

45CSR7 To Prevent and Control Particulate Matter Air Pollution From Manufacturing Processes and Associated Operations

The main requirement of 45CSR7 is the process weight rate based PM stack emission rate in section 4 of the rule. As can be seen in the table below the sources meet this requirement.

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Source	Permit Limit (lb/hr)	Rule 7 Limit (lb/hr)
Coating Area	12.03	28.00
Abrasive Blast Room	0.01	28.00
Wheelabrator	0.36	1.68

The facility is also subject to a twenty (20) percent opacity limit on all process source operations and must have a plan to minimize fugitive emissions. The applicant proposes to meet these requirements through the use of enclosures and baghouses.

The facility is also subject to the fugitive particulate matter control systems requirement of section 5.1 of 45CSR7.

45CSR13 Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Administrative Updates, Temporary Permits, General Permits, and Procedures for Evaluation).

Because uncontrolled PM and VOC emissions from the facility will exceed 6 pounds per hour and 10 tons per year and because HAP emissions from the facility will exceed 2 pounds per hour and 5 tons per year, the facility is required to submit a construction permit application under 45CSR13. Additionally, the facility is subject to several substantive rule requirements (as outlined in this section). Because this permit is a synthetic minor for HAPs, (Rule 34) "notice level C" is required. The facility will be a synthetic minor mainly because the facility would be major without the usage limits proposed in the application and that will be required in the permit. Those usage limits will also make the facility a synthetic minor source for MACT under Title V.

45CSR21 Regulation to Prevent and Control Air Pollution from the Emission of Volatile Organic Compounds

Because the facility will be located in Cabell County and coats "Miscellaneous Metal Parts", it is subject to §45-21-19. The main requirement of the rule (that is applicable to the facility) is the VOC content limit of §45-21-19.3.a.3. This limits the VOC content of any coating used to 3.5 pounds per gallon. §45-21-19.4 allows the facility to comply with the rule by using a daily-weighted average.

45CSR22 Air Quality Management Fee Program

The facility's potential to emit will be less than the 45CSR30 threshold of 100 TPY for any criteria pollutant and will be less than 10 tons per year of any individual HAP and less

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than 25 tons per year of all combined HAPs by taking a synthetic minor limitation. Additionally, no NSPS or MACT appears to apply to the facility. Therefore, the facility will not be subject to 45CSR30. Since it is not subject to 45CSR30, it is subject to 45CSR22.

## NON-APPLICABILITY DETERMINATION

The facility is potentially subject to 40 CFR 63 Subpart HHHHHH should it begin using coatings that contain one of the rules targeted HAPs (currently they do not use any coatings containing any of those HAPs). However, WV has not accepted delegation of this area source GACT and has no plans to accept delegation in the near future.

## TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

The following Hazardous Air Pollutants will be emitted from the facility (all information comes directly from EPA's Air Toxics Website):

### **Xylene**

Commercial or mixed xylene usually contains about 40-65% m-xylene and up to 20% each of o-xylene and p-xylene and ethylbenzene. Xylenes are released into the atmosphere as fugitive emissions from industrial sources, from auto exhaust, and through volatilization from their use as solvents. Acute (short-term) inhalation exposure to mixed xylenes in humans results in irritation of the eyes, nose, and throat, gastrointestinal effects, eye irritation, and neurological effects. Chronic (long-term) inhalation exposure of humans to mixed xylenes results primarily in central nervous system (CNS) effects, such as headache, dizziness, fatigue, tremors, and incoordination; respiratory, cardiovascular, and kidney effects have also been reported. EPA has classified mixed xylenes as a Group D, not classifiable as to human carcinogenicity.

### **Toluene**

Toluene is added to gasoline, used to produce benzene, and used as a solvent. Exposure to toluene may occur from breathing ambient or indoor air. The central nervous system (CNS) is the primary target organ for toluene toxicity in both humans and animals for acute (short-term) and chronic (long-term) exposures. CNS dysfunction and narcosis have been frequently observed in humans acutely exposed to toluene by inhalation; symptoms include fatigue, sleepiness, headaches, and nausea. CNS depression has been reported to occur in chronic abusers exposed to high levels of toluene. Chronic inhalation exposure of humans to toluene also causes irritation of the upper respiratory tract and eyes, sore throat, dizziness, and headache. Human studies have reported developmental effects, such as CNS dysfunction, attention deficits, and minor craniofacial and limb anomalies, in the children of pregnant women exposed to toluene or mixed solvents by inhalation. Reproductive effects, including an association between exposure to toluene and an increased incidence of spontaneous abortions, have also been noted. However, these

studies are not conclusive due to many confounding variables. EPA has classified toluene as a Group D, not classifiable as to human carcinogenicity.

## **Naphthalene**

Naphthalene is used in the production of phthalic anhydride; it is also used in mothballs. Acute (short-term) exposure of humans to naphthalene by inhalation, ingestion, and dermal contact is associated with hemolytic anemia, damage to the liver, and neurological damage. Cataracts have also been reported in workers acutely exposed to naphthalene by inhalation and ingestion. Chronic (long-term) exposure of workers and rodents to naphthalene has been reported to cause cataracts and damage to the retina. Hemolytic anemia has been reported in infants born to mothers who "sniffed" and ingested naphthalene (as mothballs) during pregnancy. Available data are inadequate to establish a causal relationship between exposure to naphthalene and cancer in humans. EPA has classified naphthalene as a Group C, possible human carcinogen.

## **Ethylene Glycol**

Ethylene glycol has many uses, including as antifreeze in cooling and heating systems, in hydraulic brake fluids, and as a solvent. Acute (short-term) exposure of humans to ethylene glycol by ingesting large quantities causes three stages of health effects: central nervous system (CNS) depression, followed by cardiopulmonary effects, and later renal damage. The only effects noted in one study of individuals exposed to low levels of ethylene glycol by inhalation for about a month were throat and upper respiratory tract irritation. Rats and mice chronically (long-term) exposed to ethylene glycol in their diet exhibited signs of kidney toxicity and liver effects. Several studies of rodents exposed orally or by inhalation showed ethylene glycol to be fetotoxic. An epidemiologic study on renal cancer mortality did not find an increased risk for workers exposed to ethylene glycol. EPA has not classified ethylene glycol for carcinogenicity.

## **Ethylbenzene**

Ethylbenzene is mainly used in the manufacture of styrene. Acute (short-term) exposure to ethylbenzene in humans results in respiratory effects, such as throat irritation and chest constriction, irritation of the eyes, and neurological effects such as dizziness. Chronic (long-term) exposure to ethylbenzene by inhalation in humans has shown conflicting results regarding its effects on the blood. Animal studies have reported effects on the blood, liver, and kidneys from chronic inhalation exposure to ethylbenzene. Limited information is available on the carcinogenic effects of ethylbenzene in humans. In a study by the National Toxicology Program (NTP), exposure to ethylbenzene by inhalation resulted in an increased incidence of kidney and testicular tumors in rats, and lung and liver tumors in mice. EPA has classified ethylbenzene as a Group D, not classifiable as to human carcinogenicity.

## **Cobalt Neodecanoate (Cobalt Compounds)**

Cobalt is a natural element found throughout the environment. Acute (short-term) exposure to high levels of cobalt by inhalation in humans and animals results in respiratory effects, such as a significant decrease in ventilatory function, congestion, edema, and hemorrhage of the lung. Respiratory effects are also the major effects noted from chronic (long-term) exposure to cobalt by inhalation, with respiratory irritation, wheezing, asthma, pneumonia, and fibrosis noted. Cardiac effects, congestion of the liver, kidneys, and conjunctiva, and immunological effects have also been noted in chronically-exposed humans. Cobalt is an essential element in humans, as a constituent of vitamin B12. Human studies are inconclusive regarding inhalation exposure to cobalt and cancer, and the one available oral study did not report a correlation between cobalt in the drinking water and cancer deaths. EPA has not classified cobalt for carcinogenicity.

## **Benzene**

Benzene is found in the air from emissions from burning coal and oil, gasoline service stations, and motor vehicle exhaust. Acute (short-term) inhalation exposure of humans to benzene may cause drowsiness, dizziness, headaches, as well as eye, skin, and respiratory tract irritation, and, at high levels, unconsciousness. Chronic (long-term) inhalation exposure has caused various disorders in the blood, including reduced numbers of red blood cells and aplastic anemia, in occupational settings. Reproductive effects have been reported for women exposed by inhalation to high levels, and adverse effects on the developing fetus have been observed in animal tests. Increased incidence of leukemia (cancer of the tissues that form white blood cells) have been observed in humans occupationally exposed to benzene. EPA has classified benzene as a Group A, human carcinogen.

## **MIBK**

Methyl isobutyl ketone is used as a solvent for gums, resins, paints, varnishes, lacquers, and nitrocellulose. Acute (short-term) exposure to methyl isobutyl ketone may irritate the eyes and mucous membranes, and cause weakness, headache, nausea, lightheadedness, vomiting, dizziness, incoordination, narcosis in humans. Chronic (long-term) occupational exposure to methyl isobutyl ketone has been observed to cause nausea, headache, burning in the eyes, weakness, insomnia, intestinal pain, and slight enlargement of the liver in humans. Lethargy and kidney and liver effects have been observed in rats and mice chronically exposed by gavage (experimentally placing the chemical in the stomach), ingestion, and inhalation. EPA has classified methyl isobutyl ketone as a Group D, not classifiable as to human carcinogenicity.

## **Hexamethylene Diisocyanate**

Hexamethylene diisocyanate is used as a polymerizing agent in polyurethane paints and coatings. Acute (short-term) exposure to high concentrations of hexamethylene diisocyanate in humans can cause pulmonary edema, coughing, and shortness of breath. Hexamethylene diisocyanate is also extremely irritating to the eyes, nose, and throat. Human studies have suggested that chronic (long-term) exposure to hexamethylene diisocyanate may cause chronic lung problems. Animal studies have reported respiratory effects from chronic inhalation exposure and skin irritation and sensitization from dermal exposure to hexamethylene diisocyanate. No information is available on the reproductive, developmental, or carcinogenic effects of hexamethylene diisocyanate in humans. EPA has not classified hexamethylene diisocyanate for carcinogenicity.

## **Formaldehyde**

Formaldehyde is used mainly to produce resins used in particleboard products and as an intermediate in the synthesis of other chemicals. Exposure to formaldehyde may occur by breathing contaminated indoor air, tobacco smoke, or ambient urban air. Acute (short-term) and chronic (long-term) inhalation exposure to formaldehyde in humans can result in respiratory symptoms, and eye, nose, and throat irritation. Limited human studies have reported an association between formaldehyde exposure and lung and nasopharyngeal cancer. Animal inhalation studies have reported an increased incidence of nasal squamous cell cancer. EPA considers formaldehyde a probable human carcinogen (Group B1).

## **Cumene**

Cumene is used in a variety of petroleum products. Acute (short-term) inhalation exposure to cumene may cause headaches, dizziness, drowsiness, slight incoordination, and unconsciousness in humans. Cumene has a potent central nervous system (CNS) depressant action characterized by a slow induction period and long duration of narcotic effects in animals. Cumene is a skin and eye irritant. No information is available on the chronic (long-term), reproductive, developmental, or carcinogenic effects of cumene in humans. Animal studies have reported increased liver, kidney, and adrenal weights from inhalation exposure to cumene. EPA has classified cumene as a Group D, not classifiable as to human carcinogenicity.

## **Methanol**

Methanol is released to the environment during industrial uses and naturally from volcanic gases, vegetation, and microbes. Exposure may occur from ambient air and during the use of solvents. Acute (short-term) or chronic (long-term) exposure of humans to methanol by inhalation or ingestion may result in blurred vision, headache, dizziness,



and nausea. No information is available on the reproductive, developmental, or carcinogenic effects of methanol in humans. Birth defects have been observed in the offspring of rats and mice exposed to methanol by inhalation. EPA has not classified methanol with respect to carcinogenicity.

#### AIR QUALITY IMPACT ANALYSIS

Because this will not be a major source as defined in 45CSR14 no modeling was performed.

#### MONITORING OF OPERATIONS

The permit will require U.S. Equipment Distributors, Inc. to monitor and record the following:

- \* VOC content of each coating/stain/solvent used.
- \* Type and amount of HAP in each coating/stain/solvent used.
- \* Amount of each coating/stain/solvent used (on a monthly basis).
- \* The amount of abrasive used in the Abrasive Blasting Area.
- \* Pressure drop across the baghouse controlling the wheelabrator.

#### RECOMMENDATION TO DIRECTOR

Information supplied in the application indicates that compliance with all applicable regulations will be achieved. Therefore it is the recommendation of the writer that permit R13-2912 for the construction of a coating facility in Huntington, Cabell County, be granted to U.S. Equipment Distributors, Inc.

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Steven R. Pursley, PE  
Engineer

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March 29, 2012

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